



# Traction cable

## RADOX EN 50306-4 1P 300V MM

### Product description:

**RADOX EN 50306-4 1P 300V MM** Multicore cables, unscreened  
 Nominal voltage: 300 / 500 V AC  
 Type of installation: Mechanically protected  
 Hazard level: M (extra low temperature resistant, extra oil and fuel resistant)

### General features:

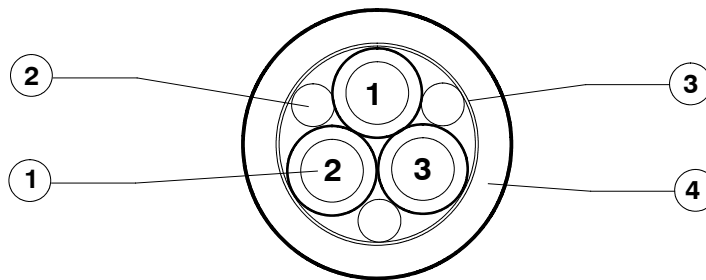
Halogen-free, electron-beam cross-linked cables with improved behaviour in case of fire, easy to strip, soldering resistant and flexible. Meets the requirements of the EN 50306-4 standard.

### Application:

The cores are intended for fixed installation inside railway vehicles or for installation in applications where limited alternating bending stresses occur during operation.

Guidelines for selection and installation are described in the standards EN 50355 and EN 50343.

### General composition of cable:



- |    |                       |             |   |
|----|-----------------------|-------------|---|
| 1. | EN 50306-2 300V cores | Conductor:  | tin plated copper wire, acc. to EN 50306-2      |
|    |                       | Insulation: | RADOX EI 306                                    |
|    |                       | colour:     | white, black numbered<br>green-yellow, optional |
| 2. | Filler (optional)     |             | RADOX 125 REC                                   |
| 3. | Wrapping              |             | tape  |
| 4. | Sheath                |             | RADOX EM 104, colour: black, yellow marked      |

### Marking:

[a] HUBER+SUHNER RADOX EN 50306-4 1P 300V [b] MM 90 [c]-[d] [e] [f]

[a]	Meter marking (in m)	example:
[b]	Construction	= 1234 = m
[c]	Part number	3X1.5
[d]	Batch number	12345678
[e]	Production week and year	1234567
[f]	Production place (only if China)	03-2017
		CN

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The product fulfils the test and specification requirements described in this document for the stated areas of application and operating conditions. HUBER+SUHNER AG does not expressly or implicitly guarantee performance under additional or changed conditions. Deviations are to be agreed upon in writing.

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### Technical data:

Voltage rating cond.- earth	U <sub>0</sub>	300	V AC
Voltage rating cond.- cond.	U	500	V AC
maximum permissible Voltage rating AC cond.- earth		360	V AC
maximum permissible Voltage rating AC cond.- cond.	U <sub>m</sub>	600	V AC
maximum permissible Voltage rating DC cond.- earth	V <sub>0</sub>	450	V DC
maximum permissible Voltage rating DC cond.- cond.		750	V DC
Test voltage		2000	V AC
Temperature range		- 40 ... + 120	°C
Min. bending radius			
fixed installation	cable dia. ≤ 12 mm	3 x D	
	cable dia. > 12 mm	4 x D	
sporadic movement	cable dia. ≤ 12 mm	4 x D	
	cable dia. > 12 mm	5 x D	

### NB:

The upper temperature limit is determined by long term ageing according to EN 50305 Par. 7 and extrapolation to 20,000 hours.

The lower temperature limit is determined by bending and elongation tests according to EN 60811- 504/505.

The specified bending radii require a careful and proper handling using proven fastening technologies.

### The cables are in conformity with:

<b>Fire protection on railway vehicles, hazard level</b>	<b>HL1 - HL3</b>	<b>EN 45545</b>
Vertical flame spread	50 < L ≤ 540 mm	EN 60332- 1- 2
Vertical flame spread, bunched, D ≤ 6 mm	L ≤ 1.5 m	EN 50305, 9.1.2
Vertical flame spread, bunched, 6 < D < 12 mm	L ≤ 2.5 m	EN 50305, 9.1.1 (EN 60332- 3- 25)
Vertical flame spread, bunched, D ≥ 12 mm	L ≤ 2.5 m	EN 60332- 3- 24
Smoke density	T ≥ 70 %	EN 61034- 2
Toxicity	ITC ≤ 6	EN 50305, 9.2
<b>Fire protection on railway vehicles, hazard level</b>	<b>1 - 4</b>	<b>DIN 5510</b>
Vertical flame spread	50 < L ≤ 540 mm	EN 60332- 1- 2
Vertical flame spread, bunched, D ≤ 6 mm	L ≤ 1.5 m	EN 50305, 9.1.2
Vertical flame spread, bunched, 6 < D < 12 mm	L ≤ 2.5 m	EN 50266- 2- 5 (EN 50305, 9.1.1)
Vertical flame spread, bunched, D ≥ 12 mm	L ≤ 2.5 m	EN 50266- 2- 4
Smoke density	T ≥ 60 %	EN 61034- 2
Corrosivity of combustion gases*	pH ≥ 4.3, C ≤ 10 μS/mm	EN 50267- 2- 2
Amount of halogen acid gas*	HCl + HBr ≤ 0.5 %	EN 50267- 2- 1
Content of fluorine*	HF ≤ 0.1 %	EN 60684- 2, 45.2
Toxicity, insulation	ITC ≤ 6	EN 50305, 9.2
Toxicity, filler and wrapping	ITC ≤ 3	EN 50305, 9.2
Toxicity, sheath	ITC ≤ 3	EN 50305, 9.2

\* Insulation, filler, wrapping and sheath

<b>Fire protection on railway vehicles, category</b>	<b>A1, A2, B</b>	<b>NF F16- 101</b>
Fire protection on railway vehicles, class	C / F0	NF F16- 101
Vertical flame spread	50 < L ≤ 540 mm	NF C32- 070, 2.1
Vertical flame spread, bunched	L ≤ 300 mm	NF C32- 070, 2.2
Smoke index	I.F. ≤ 5	X10- 702- 2, NF X70- 100- 1

### Requirement of hazard level code M

(according to EN 50264- 1 or EN 50306- 1)

Extra low temperature	- 40°C
Extra oil resistance	IRM 902, 72h, 100°C
Extra fuel resistance	IRM 903, 168h, 70°C

### Applicable documents:

- 585 536 Datasheet of cores
- 586 555 Current rating for single core cables



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Construction 1) n x mm <sup>2</sup>	Conductor nom. Dia. mm	Core 2) Dia. nom. mm	Cable dia. mm	R <sub>20</sub> 3) max. Ω/km	Fireload nom. kJ/m	Weight nom.		H + S Part No.
						Copper	Cable kg / 100m	
4x0.5	0.9	1.42	4.9±0.2	40.1	350	1.8	4.2	12586008
7x0.5 7G0.5	0.9	1.42	5.6±0.3	40.1	490	3.2	6.1	12586009 85064802
13x0.5	0.9	1.42	8.0±0.3	40.1	940	5.9	11.6	12586010
19x0.5	0.9	1.42	8.8±0.3	40.1	1210	8.7	15.8	12586011
37x0.5	0.9	1.42	11.6±0.4	40.1	2000	16.9	27.8	12586012
4x0.75 4G0.75	1.1	1.62	5.4±0.2	26.7	440	2.8	5.6	12586013 12586014
7x0.75 7G0.75	1.1	1.62	6.2±0.3	26.7	590	4.9	8.4	12586015 12586016
13x0.75	1.1	1.62	8.9±0.3	26.7	1130	9.1	15.9	12586017
19x0.75	1.1	1.62	9.9±0.3	26.7	1430	13.3	21.5	12586018
37x0.75	1.1	1.62	13.1±0.3	26.7	2440	26.0	39.1	12586019
48x0.75	1.1	1.62	15.1±0.4	26.7	3110	33.7	50.4	12586020
4x1	1.2	1.77	5.7±0.2	20.0	460	3.6	6.5	12586021
7x1	1.2	1.77	6.7±0.3	20.0	645	6.3	10.1	12586022
13x1	1.2	1.77	9.6±0.3	20.0	1250	11.7	19.2	12586023
19x1	1.2	1.77	10.7±0.3	20.0	1560	17.0	26.0	12586024
37x1	1.2	1.77	14.1±0.4	20.0	2590	33.2	47.1	12586025
4x1.5 4G1.5	1.5	2.17	6.7±0.3	13.7	610	5.2	9.3	12586026 84091342
7x1.5	1.5	2.17	8.3±0.3	13.7	990	9.1	15.2	12586027
13x1.5	1.5	2.17	11.5±0.4	13.7	1790	17.0	27.7	12586028
19x1.5	1.5	2.17	12.7±0.4	13.7	2170	24.9	37.3	12586029
37x1.5	1.5	2.17	17.4±0.4	13.7	3900	48.6	70.0	12586030
2x2.5	1.9	2.75	7.3±0.3	8.21	800	4.3	9.6	12586031
3x2.5 3G2.5	1.9	2.75	7.8±0.3	8.21	860	6.5	12.2	12586032 12586033
4x2.5 4G2.5	1.9	2.75	8.6±0.3	8.21	1030	8.7	15.3	12586034 12586035



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### customized types

Meet the requirements of the EN 50306-4, the mechanical data are not listed in the table of the related standard.

Construction <sup>1)</sup> n x mm <sup>2</sup>	Conductor nom. Dia. mm	Core <sup>2)</sup> Dia. nom. mm	Cable dia. mm	R <sub>20</sub> <sup>3)</sup> max. Ω/km	Fireload nom. kJ/m	Weight nom.		H + S Part No.
						Copper	Cable kg / 100m	
2x0.5	0.9	1.42	4.2±0.3	40.1	265	0.9	2.8	85077411
5x0.5	0.9	1.42	5.35±0.3	40.1	450	2.3	5.2	84138241
6x0.5	0.9	1.42	5.7±0.3	40.1	480	2.7	5.9	84138242
10x0.5	0.9	1.42	7.3±0.3	40.1	775	4.5	9.4	84120849
2x0.75	1.1	1.62	4.7±0.3	26.7	320	1.4	3.8	84115498
3x0.75 3G0.75	1.1	1.62	4.9±0.3	26.7	340	2.1	4.5	84117216 85013457
6x0.75	1.1	1.62	6.4±0.3	26.7	594	4.2	8.1	85088646
2x1	1.2	1.77	4.9±0.2	20.0	335	1.8	4.3	84088673
3x1	1.2	1.77	5.25±0.3	20.0	395	2.7	5.3	85006857
10x1	1.2	1.77	8.8±0.3	20.0	1040	9.0	15.5	84136197
16x1	1.2	1.77	10.4±0.4	20.0	1460	14.4	23.1	84136198
2x1.5	1.5	2.17	5.8±0.3	13.7	480	2.6	6.1	84094661
3x1.5 3G1.5	1.5	2.17	6.3±0.3	13.7	575	3.9	7.7	84135145 12586140
10G1.5	1.5	2.17	10.2±0.3	13.7	1320	13.1	21.5	12586141
12G1.5	1.5	2.17	11.0±0.4	13.7	1540	15.7	25.5	12586142
7x2.5	1.9	2.75	10.0±0.3	8.21	1370	15.3	23.5	84141575
13x2.5	1.9	2.75	14.2±0.4	8.21	2620	28.4	43.8	84141567
19x2.5	1.9	2.75	15.8±0.5	8.21	3210	41.6	59.6	84141494

- 1) X: one colour, numbered  
G: one green- yellow core, others one colour, numbered  
V: various colours  
2) Cores: Tolerances of core diameter see H+S Datasheet 585536  
3) R<sub>20</sub>: Conductor resistance according to EN 50306-2